

REMARKS

The Examiner called the Applicant's attention to the proper form of an abstract. However, the Examiner did not point to any particular defect in the abstract. Applicant submits that the abstract as originally filed is satisfactory.

The Examiner rejected Claims 1, 3, 6, 9, 11 and 14 under 35 U.S.C. 103(a) as being unpatentable over Tamaki, *et al* (hereafter "Tamaki")(5,784,285) in view of Ahuja, *et al* (hereafter "Ahuja")(5,740,036). Applicant traverses this rejection.

To sustain a rejection under 35 U.S.C. 103, the Examiner must show that the combined references teach each of the elements of the claim or that there is some motivation in the art for altering one of the teachings to arrive at the combined set of teachings. "The mere fact that a reference could be modified to produce the patented invention would not make the modification obvious unless it is suggested by the prior art." (*Libbey-Owens-Ford v. BOC Group*, 4 USPQ 2d 1097, 1103). "When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference" (*In re Rijckaert*, 28 USPQ2d, 1955, 1957). In addition, the Examiner must show that there is some motivation in the art that would cause someone of ordinary skill to combine the references, and that in making the combination, there was a reasonable expectation of success. Where the claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under section 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *In re Vaeck*, 20 USPQ2d 1438, 1442(CAFC 1991).

Regarding Claims 1, 3, 6, 9, 11, and 14, the Examiner argues that Tamaki teaches the present invention as claimed with the exception of analyzing the input signal into low and high frequency components. The Examiner looks to Ahuja for disclosing a wavelet transform analyzing a signal into low and high frequency components. The Examiner maintains that the

choice of frequency analysis is a matter of design choice. In the alternative, choosing a threshold value of zero none of the components are suppressed, thus all the frequency components are combined and the filtered signal is identical to the input signal. With respect to Claim 6, the Examiner maintains that this limitation is not critical, and hence, has no patentable weight or would be obvious.

First, Tamaki teaches a filter in which the input signal is analyzed into wavelet components and then each wavelet component is inverse transformed to provide corresponding wavelet-analyzed components. Selected ones of the wavelet-analyzed components are then added together to provide the filtered signal. In the system taught in Tamaki, a wavelet-analyzed component is either included in its entirety in the filtered signal or omitted entirely from the filtered signal. The choice of which components are included or emitted is based on different criteria in the different embodiments taught in Tamaki. Tamaki does not teach applying a thresholding transformation to any wavelet spectrum. In fact, Tamaki does not teach processing the wavelet spectra in any form prior to performing the inverse transform.

The present invention, as claimed in Claim 1, produces an analyzed high-frequency waveform which is then modified by zeroing the amplitudes of the points that have amplitudes less than a threshold value to produce a processed high-frequency signal. The filtered signal is then generated by applying the inverse transform of the analyzing transform to the processed high-frequency signal and the low-frequency signal. Even if one were to substitute the transforms of Ahuja for the analysis transforms taught in Tamaki, the resultant device does not satisfy the claims in question except in the case in which the threshold value of the present invention is zero and the algorithm of Tamaki adds up all the wavelet-analyzed components. However, no one would construct such an embodiment of Tamaki because it would not perform any filtering operation. That is, there is no reasonable expectation of success in making such an embodiment by combining the teachings and making the modification in question. Accordingly, Applicant submits that the Examiner has not made a *prima facie* case for obviousness with respect to Claim 1 or the claims dependent therefrom.

With reference to Claims 3 and 11, the Examiner has not pointed to any teaching in the art of mathematically transforming the input signal prior to applying the filter and then

performing the inverse transform on the filtered signal. Hence, Applicant submits that there are additional grounds for allowing Claims 3 and 11.

With reference to Claims 6 and 14, as noted above, the Examiner maintains that the Applicant has not shown that the limitation is critical, and hence, the limitation is not entitled to any patentable weight. First, Applicant is not required to show that a particular limitation is critical. Second, the Examiner is directed to the discussion of Figure 5 in the specification, which provides the advantages of using such a thresholding scheme in a particular class of filtering problems. Hence, there are additional grounds for allowing Claims 6 and 14.

With respect to Claim 9, the Examiner has not pointed to any teaching in Tamaki of cascading two filters of the type claimed in Claim 1 using different filters of the types. Hence, there are additional grounds for allowing Claim 9, and the claims dependent therefrom.

The Examiner rejected Claims 2 and 10 under 35 U.S.C. 103(a) as being unpatentable over Tamaki in view of Ahuja in further view of Shark, et al (hereafter "Shark")(Signal Processing Proceedings, 2000, WCCC_ICSP 2000. 5th International Conference on Vol 1, 21-25 Aug. 2000 Pages 315 – 320). Applicant traverses this rejection and repeats the arguments made above with respect to the missing teachings in the combination of Tamaki and Ahuja. Shark does not provide the missing teachings. Accordingly, Applicant submits that the Examiner has not made a *prima facie* case for obviousness with respect to Claims 2 and 10.

The Examiner rejected Claims 4-5 and 12-13 under 35 U.S.C. 103(a) as being unpatentable over Tamaki in view of Ahuja in further view of Applicant Admitted Prior Art (AAPA). Applicant traverses this rejection.

First, as noted above, these claims depend from Claim 3 and Claim 11, which Applicant has already argued are separately patentable. The Examiner has not pointed to any teaching in the AAPA that provides the missing teachings.

With reference to Claims 4 and 12, the Examiner admits that the combination of Tamaki and Ahuja does not teach transforming the input signal to the filter of Claim 1 using a logarithmic transform, filtering the transformed signal, and then performing the inverse

logarithmic transform on the filter signal. The Examiner maintains that it would be obvious to include this limitation because Applicant admits that instruments that display the logarithm of the input signal are known.

First, it should be noted that the passage from the specification cited by the Examiner states that the use of prior art video filters with such displays introduces errors. Hence, if anything, the cited passage teaches away from using the logarithmic transform. Second, there is no teaching of performing the inverse logarithmic transform on a filtered signal. Hence, the combined teachings cited by the Examiner do not provide all of the limitations of the present invention as claimed in Claim 4 and Claim 12. Accordingly, there are additional grounds for allowing Claim 4 and Claim 12.

With respect to Claims 5 and 13, the Examiner maintains that the limitation is a mere matter of design choice and, since there is no teaching of criticality, the limitations are not entitled to patentable weight. As noted above, this argument is flawed. In addition, the advantages provided by these transforms are discussed in detail with reference to the discussion of Figure 5 in the specification. Accordingly, Applicant submits that there are additional grounds for allowing Claims 5 and 13.

I hereby certify that this paper is being sent by FAX to 703-872-9306.

Respectfully Submitted,



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